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The
MANAGEMENT REVIEW

July, 1928

Production Control *

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THE subject of production control has been given a great deal of publicity during the last few years, and from a theoretical standpoint there remains little to be added that is new or unique. The text books and journals of scientific management have presented the theory of production control in minute detail, and for this reason, the present paper will be confined to a description of the generally accepted principles of production control as they are applied in the Manufacturing Department of the Western Electric Company.

The manufacturing organization, which will be described operates a plant which employs approximately 5,000 people, occupies over 1,300,000 square feet of floor space and produces annually over $27,000,000 worth of manufactured product. All the well-known mechanical operations are employed in this manufacturing work, as well as those peculiar to our business. The product manufactured involves the production of some 13,000 kinds of apparatus, requiring over 110,000 different parts. Although Kearny does not manufacture the complete line nearly all of it must be available for our use.

For the purpose of clarity, the various phases of productions control have been segregated under eleven main headings which are:

Organization
Plant Layout
Planning of Manufacture
Scheduling
Operating
Tracing
Inspecting
Counting
Investment
Costs, and
Results.

The ground covered by the first two are self-explanatory. Under the third heading, "Planning of Manufacture," there will be described the manufacturing methods to be employed, and providing machinery and tools.

The subject of "Scheduling" will cover the determination of the production program, placing the schedules and maintaining stocks. Under "Oper-

* Presented at Joint Meeting of A. M. A. and S. I. E., Feb. 7, 1928.

ating" the direct control of labor will be discussed, and under "Tracing" the following of production through the factory. "Inspecting" and "Counting" will outline the methods set up for the determination of quality and for the counting and crediting of completed work. Because of the limited time this evening I am not going to attempt to describe the "Investment," "Costs," and "Results" features of our organization but will describe our set up for manufacturing analysis and production control.

The organization in general is set up along functional lines, each major class of work being performed by a separate organization. This is illustrated by the organization chart shown in Figure 1. It will be seen that there are seven major organizations, the duties of each of which are outlined in a general way on the chart.

The "Engineer of Manufacture" organization devises and furnishes complete plans for all the operations of manufacture and provides the equipment required. It is the organizations which carries the responsibility for keeping the works abreast of the development in the art of manufacture.

The plan of manufacture and the equipment supplied by the "Engineer of Manufacture" is received by the "Technical Branch" of the Works organization and by them applied to the Factory. To this end the "Technical Branch" provides the factory with instructions for manufacture in the form of layouts which definitely specify each operation to be performed, the tools and machines to be used, the speed at which each machine shall be operated, the containers in which the parts are to be handled, the amount and kind of raw material to be used, and the departments to which the parts shall be routed for inspections and subsequent operations.

The "Technical Branch" establishes the piecework rates to be used, follows the manufacturing work through its early stages to determine whether the methods and equipment employed give the results expected and accepts the burden of overcoming difficulties that may be encountered in the operation of the plan. This organization also acts as the Works landlord, operating the power plant and service systems, maintaining the grounds and buildings, and supervising the watch and fire protection service.

The "Industrial Relations Branch" handles the various personnel activities of the Works, employment, physical examination facilities, hospital, restaurants, contacts with employee clubs and associations and application of pension and benefit plans.

The "Operating Branch" comprises all of the departments which are actually engaged in the operation of machines and handling of productive labor in manufacturing the product. From the outline of the functions and duties of the preceding branches, it will be seen that every facility is furnished to the operating department, i.e., manufacturing drawings, layouts, instructing

them how to proceed, machine, tools, orders, materials, and labor. It is the operating job to efficiently co-ordinate and utilize the equipment, materials and labor.

The "Inspection Branch" is responsible for the quality of the product from the receipt of raw material through each process operation to the final inspection of the completed apparatus.

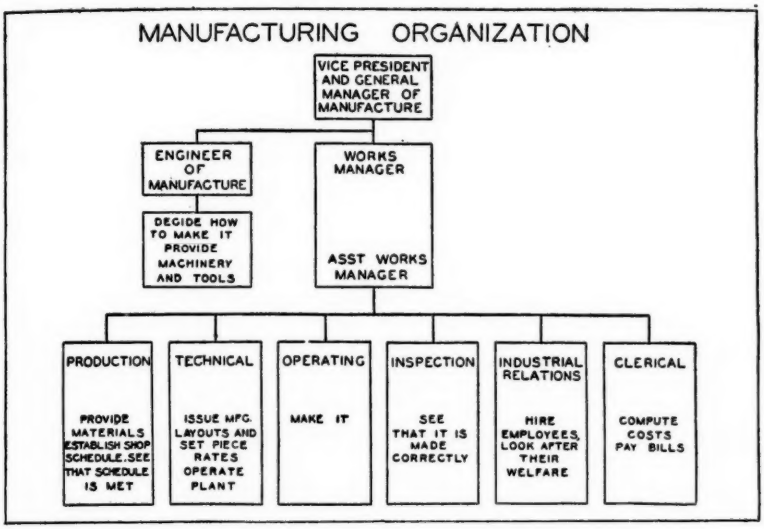

FIG. 1. CHART OF MANUFACTURING ORGANIZATION

The "Clerical Branch" is the comptroller of the Works. It sets up the clerical system under which the Works shall operate, prescribes routines, computes the payroll, pays the help and the bills for material and supplies. This organization also compiles the costs and reports showing results.

Each of the organizations just described is complete in itself, having its own superintendent and staff working, of course, in co-operation with the other branches.

Design Analysis and Preparation of Drawings

The design of the new product has a very important bearing on production, and for this reason, a thorough analysis of the design of each new article is made in advance of its actual manufacture. It is frequently possible by this means to eliminate features which would prove troublesome in the factory. Changes which will contribute to more economical manufacture or permit more rugged tool construction may be made, thus eliminating interruption to production by tool failure.

After the final design has been approved the manufacturing drawings are

prepared. These consist of detail drawings of each part, assembly drawings showing how the various parts are associated, a stock list showing the kinds and quantities of parts required, and a test sheet which shows the mechanical or electrical requirements which the apparatus must fulfill in order to assure satisfactory performance.

The Manufacturing Analysis

This analysis involves the determination of the logical and most economical sequence for the performance of the operations, and the selection of the best available methods for manufacture with special attention being given to the quantity of parts required and the accuracy with which they must be made. These factors have a very important bearing on the investment in tools and equipment, which in turn is reflected in cost.

When the quantities to be manufactured are large, a relatively heavy investment in equipment is justified to permit building multiple tools and combining operations, or even the construction of special machinery, in order to obtain higher outputs per unit of labor which, of course, should more than offset the heavy investment during a period well within the life of the equipment. When the quantities are small on the other hand, the cost of the more efficient types of tools is not usually warranted, and those of simple and inexpensive design must be used at a resulting higher labor cost. In each case, the procedure which will result into lowest total cost must be determined.

Accuracy is also an important consideration, as the productivity per man or machine hour is, in general, inversely proportional to restricted dimensional limits and tolerance. Excessive costs from this cause are a reflection of the greater care that has had to be exercised; and the necessity for a high grade of labor and tools, and of high maintenance to tools and machines to keep them in condition to produce parts within the required accuracy.

The manufacturing analysis prescribes the sequence of operations, the tools and machines to be used, machine feeds and speeds, and the kind and quantities of material to be drawn from storerooms. This information when received by the "Technical Branch" is issued in the form of a manufacturing layout which serves the operating department as a complete instruction for the manufacture of the part.

At the time of preparing the manufacturing analysis, construction or purchase orders are originated for all the tools, machinery and equipment required to follow out the manufacturing methods which have been prescribed. These orders are forwarded to the Tool and Machine Design Department for design or editing and then to the tool shop for construction or to the buyer for purchase.

In order to plan and execute a well-balanced production program some

indication of the volume and character of future business is necessary. The first of the activities of the scheduling organization consists, therefore, of setting up a forward picture of the probable manufacturing activity. This forecast compiled semi-annually is based on the orders on hand, past requirements, and future indications and is expressed in terms of the major requirements. These requirements are later broken down into individual parts in order to present a picture of the probable future activities of the machine and assembly department. This semi-annual estimate also provides a basis for a general survey of raw material needs and is used in compiling advance raw material requirements for use in contract or quantity buying.

While the semi-annual estimate does not authorize manufacture and is subject to some revision as time advances, it assists materially in the maintenance of an even shop load, and permits increases and decreases in the production program to be made most economically. It also enables each organization to get its house in order somewhat in advance of a change in actual production rate.

The Manufacturing Schedule

For a factory handling a volume and variety of apparatus such as ours, the task of scheduling the work so that the deliveries of the numerous individual orders will be accurately co-ordinated requires a close analysis of two fundamental considerations: the process time allowance and the distribution of load. For accurately estimating process time allowances, records are maintained showing the average time required for each part and piece of apparatus to travel through the factory. The more closely the allowance for each part checks with the actual performance the better is the scheduling organization enabled to plan an even distribution of the load. The economical operation of the factory depends very largely upon the accurate planning of this distribution, since it is only by the elimination of peaks and valleys in the production chart that labor turnover can be minimized, and the alternate idleness and over-crowding of machines and floor space avoided. Such conditions invariably increase manufacturing costs.

Our large variety of products presents perhaps every known type of scheduling problem. The demand varies from the year-to-year requirement of several million of one part to the special order for one of another part, which may never be made again. Between these two extremes may occur the large order which will not be repeated and the small order which will be fairly constant from year-to-year. The control of this problem requires a careful analysis of each order received, the maintenance of adequate process allowance records, and a definite "fitting" of each new order into the general production program.

Mechanical Compiling

Definite authorizations for the manufacture of each major type of apparatus are issued monthly. As they are derived from a number of sources the summarization of all the monthly requirements on any one item would ordinarily present a complicated and expensive task. However, a mechanical tabulating system has been developed for which a card is originated each time the same item is encountered in our orders, and by mechanically sorting and combining these cards the total requirements can be readily compiled.

As each item of apparatus is assembled from a number of component parts, which may be common to other types of apparatus, the summarization of the component part requirements is also a somewhat involved problem. Here again the mechanical tabulating system may be used to even better advantage than in the preliminary summary.

For all standard apparatus items, several sets of tabulating cards showing the requirements of component parts are maintained, each set for a different quantity of the items, so that by combining these sets the total requirements of the component parts can be compiled without the additional work of issuing new cards.

From the part requirements thus tabulated, summarized schedules are prepared for the factory. The schedules are then analyzed for the raw material requirements. This information, obtained from the manufacturing layout, is posted to a master raw material record, which collects, for one kind of material, the requirements derived from the schedules of a number of different parts.

General Production Program

The general production program which now represents the analysis of the sum total of all orders on hand, is distributed into monthly loads, and a card originated for each major piece of apparatus showing the required rate of production. In general it is possible at this time to fit each new job into the general program, and to determine when final delivery can be made, since standard intervals for each manufacturing operation have been previously set up from the process allowance records.

In the factory the schedules are supplemented by what is known as an "Operating Conditions" report, which is maintained by each operating department. The quantity of each part required for the month is converted into machine and man hours from pre-established data, and the figures entered in their proper columns according to the type of equipment used. In a few of the columns more than one machine is listed, which signifies that the work may be performed on any one of these machines without affecting the cost. The cumulative total in any one column when balanced with the total

machine capacity for the type of machine involved and entered at the top of the sheet, readily shows any condition of overload or underload. By means of this sheet the foreman can readily determine the exact status of all jobs in the department, and is forwarned of the necessity for emergency measures. He is thereby enabled to control efficiently his activity and concentrate his equipment and personnel where required.

Maintaining Stocks of Material and Parts

After the receipt of the definite apparatus authorization, considerable time must elapse for procuring raw material, the manufacture of the parts, and the assembly of the parts into the apparatus. To eliminate this interval, sufficient stocks are maintained of all standard apparatus, parts and raw material to meet the current monthly requirements and to supply any moderate additional needs which may develop.

The stocking of materials, parts, and finished products is conducted by a number of storerooms, each carrying a distinct class of articles, and located in close proximity to the source of demand for those articles.

In general, current requirements can be filled immediately from current stocks and the monthly orders are to replenish this stock against anticipated requirements for the succeeding month. In maintaining stocks of apparatus and parts, it is of course necessary to again consider the required process intervals. The control of raw material stocks is affected by the value and nature of the material, the conditions under which it may be procured from normal sources of supply, and the general purchasing policy in regard to the particular item.

Although the ordering and stock maintenance of apparatus, parts, and raw material involves the control of over 100,000 separate items, these functions are controlled with a relatively small personnel, by reducing the necessary clerical operations to a simplified form and establishing routines, formulas and methods which will, as much as possible, function automatically.

Complete records on all items of stock are kept in a master file where they are readily accessible to the organizations interested. In addition to a complete description of the item and its accounting designation number and classificaation, master cards show past monthly and yearly consumption, definite monthly requirements (as received from tabulating card breakdowns) and anticipated monthly rates (as derived from the semi-annual estimate). Piece part cards and apparatus cards also contain ordering instructions such as the process interval to be allowed, stock limits to be maintained, shrinkage to be compensated for, the value of the item, and the minimum quantity which can be economically produced in one lot.

Raw material cards show necessary purchasing intervals and any other

information affecting the procurement of the material. Posting of information to this card file is performed by a carefully trained group of employees who are responsible for keeping the information up-to-date and for issuing all reports, balance sheets, and other information regarding the status of stocks. Master cards carry limits for overstock, ordering and understock, and where fluctuations in the stock balance carry the quantities on hand past any one of these points, the item is signalled by the posting clerk for the attention of the individual responsible. In this way the condition of "live" items can be followed very closely, while dormant items come up for survey periodically.

Wherever possible, computing quantities for stock replenishing orders is governed by a basic formula, this method allowing the delegation of the ordering to a less expensive clerical force than would otherwise be required. Such standardization enables us to control stock balances satisfactorily with a relatively small force of ordering clerks; one clerk, in some instances, controlling 500 to 1,000 separate items. While establishing more or less automatic controls does not always meet the requirements of unexpected demands, it is, in the main, satisfactory for our purpose. Overbalanced stock conditions, while they cannot always be prevented, can usually be minimized by a careful study of the situation encountered and the application of proper routines.

Tracing Work-in-Process

In order to insure the delivery of parts and apparatus in accordance with schedule and to control investment we maintain a tracing system. This system is operated by an organization whose function it is to co-ordinate the work carried on by the various branches. Upon this organization also rests the responsibility for seeing that all necessary steps are taken to insure the successful carrying out of the production program.

The need of a tracing organization is brought about chiefly by manufacturing difficulties and potential sources of delay, which from their nature cannot be foreseen or guarded against without incurring a prohibitive investment in tools, machines, or material.

As previously explained, the orders placed in the factory are of two kinds: First, those which call for direct shipment and second, those which are to replenish depleted stocks.

A copy of all orders and schedules placed in the factory and the required delivery dates on the parts and finished apparatus are furnished to the tracing organization. Knowing the quantity of each part required daily, it is the tracer's duty to watch the amounts of each available in stock, so that he may know on what to exert pressure.

In order to keep the tracing organization acquainted at all times with the

movement of the parts and apparatus scheduled, a centralized set of records is maintained. These records show the quantities on schedule, the date and amount of each individual delivery from the various operating departments in the layout, and the total deliveries to date. This record is compiled from copies of the delivery tickets which accompany all material in its progress from department to department throughout the process of manufacture.

This record presents an exact picture of the progress of the work, and from it can be readily determined whether the parts and apparatus are moving in according with the needs, and whether the Assembly Departments are receiving a continuous flow of parts in order to insure uninterrupted production of the finished product.

The tracing organization is so organized that each group handles certain major classes of apparatus. This includes the manufacture of the component parts as well as the assembly of the apparatus. It follows that the personnel of each group, from their constant association in the factory with the apparatus to which they are assigned, learn what manufacturing difficulties or obstructions may be encountered. Anything that seems likely to endanger the successful accomplishment of the program is called to the attention of the organization functionally responsible. When occasion demands, it is also the function of the tracing organization to authorize emergency measures.

As an aid to the realization of the monthly rates of production on apparatus and parts, a report known as the "Trouble Bulletin" is issued weekly in which those items not being produced at the required rates are emphasized. This report explains to the supervisors and executives interested the nature of the difficulties being encountered in maintaining productions, such as tool breakdowns, raw material shortages, etc. In this manner, the attention of the entire organization is directed to the apparatus or parts in trouble, or headed for trouble which usually permits corrective measures to be taken before delivery promises have been broken.

The quality of the product is controlled largely by means of inspection. Inspection does not, of course, create quality, but its function is to measure it and to assist the operating organization in maintaining the desired quality levels. It does this by refusing to permit unsatisfactory material to proceed further in the process or to be shipped, and also by tabulating the results of inspection so that the responsible organizations may see wherein the product falls below the desired quality levels.

The labor required for inspection is generally of a somewhat higher class than is required for ordinary production operations. There is, however, quite a wide variety in the kind of effort required ranging all the way from simple mechanical gaging operations, to making tests on complicated wire equipments, which involve complex electrical circuits. Practically the same problems,

therefore, in regard to the selection and placement of personnel are presented as in the operating departments.

Development of Equipment and Methods

One of the most interesting phases of the evolution of inspection work is the development of equipment and methods whereby unskilled and semi-skilled people are able to make intricate and difficult physical measurements and electrical tests with a relatively high degree of precision by ingenious adaptation of laboratory methods and facilities to ordinary shop conditions. Not only is high-class work of this kind carried on as a routine process but the rate of production is far greater than would be expected by one acquainted only with the technical or scientific side.

A study of quality statistics has justified the application of the theory of sampling and the theory of probable recurrence to our product thus eliminating to a great extent detail inspection. This practice is particularly adaptable to parts made in large quantities. This insures a product of uniform commercial quality at considerably reduced cost.

Heretofore it has never been considered advisable to place Inspection work on a wage incentive basis, because of the fear of the effect on quality standards. However, appreciating that having no means to measure the accomplishments of operators is conducive to inefficiencies which also reduce the quality standards, the necessity for a wage incentive plan seemed desirable. As a result of experience and observation a plan has been devised whereby inspectors are rated on the basis of quantity and quality of output and their accomplishment used as a means of granting increases in salary at rate revision periods.

This plan has resulted in very substantial savings in labor costs.

In addition, an overall check inspection on a small percentage of the entire product is made by an entirely separate organization, to insure the maintenance of the general level of quality.

As a large percentage of our manufacturing is performed on a piecework basis, it is necessary to count materials and parts after each operation performed in order to determine the wage due each operator. Counting operations are also required in receiving and delivering materials from stores and for the purpose of maintaining records. Counting rooms are located adjacent to inspection groups and to the manufacturing units served. From these counting groups, credit forms are distributed to the payroll and cost organization, to stock record posting groups, and to tracing organizations interested in the progress of the particular material during manufacture.

By means of these counting room credits we figure our output value, our costs, in fact everything upon which to judge the success of our production control and of the business.

THE MANAGEMENT INDEX

Abstracts and News Items

GENERAL MANAGEMENT

American Efficiency From the Standpoint of British Labor

One of the representatives of labor on the British Industrial Commission to the United States tells what he thinks of the American industrial situation and what he thinks is far from complimentary.

The paper contains so many inaccuracies that reading it is likely to be of little value to anyone who is at all sensitive to criticism, but at the same time many American business men are so complacent that it would probably pay them to see themselves as others see them. By Ernest Bevin. Twenty-Fifth Lecture Conference for Works Directors, Managers, etc., held at Balliol College, Oxford, England, September 29 to October 3, 1927, p. 15:6¼.

W. J. D.

The Danger of Organizing Too Mechanically and Losing Touch with the Personal Element

In guarding against the danger of spiritual loss in industry there are five main points:

1. We must get a right conception of the purpose of industry and our part in it. Industry is national service.

2. Management must take the rank and file workers into confidence with regard to the problems of the business and the best method of solving them. The method will depend on the size of the factory.

3. Some form of profit-sharing is almost essential if we are to establish a common interest between the worker and employer and if the old relation is to be replaced by partnership.

4. So far as possible, all matters connected with the employment side of industry should be settled mutually by the workers and the management.

5. We must see to it that the workers find some outlet for their natural desires since a communal life is really compulsory upon us, and it is extremely desirable to leave room for the lighter and kindlier aspects of that life. By B. Seebohm Rowntree. Twenty-Fifth Lecture Conference for Works Directors, Managers, etc., held at Balliol College, Oxford, September 29 to October 3, 1927, p. 46:5.

Why Prices Fail to Guide

In what previous periods of prosperity have business men been so tireless as today in reducing costs? To lower production costs has become an *idée fixe* with successful executives, and their attention and efforts are spilling over into the comparatively neglected field of distribution costs. A new urge in this direction has emerged.

Waste is being eliminated and costs are being reduced and prices have titled downward in a time of good prosperity. It would be rash to say that costs and prices would not continue to feel the effect of further improvements of productive technique.

With straight-line continuous methods of production, with small inventories turning over rapidly, with quick transportation, and

with prices fluctuating within narrow limits as they work slowly downward, large forward commitments would be as out of date as the old spinning wheel.

The new forces at work in industry today have caused prices, at least temporarily, to fail as a guide to expansion or contraction of business activity. It is patently true that none of the other so-called mechanical forecasters of business has fared better.

New economic factors and relationships should be studied pragmatically without recourse to the shibboleths of pre-war days. Business is becoming able to a small extent to control its course. Guides of action suitable to the new situation and psychology must be found or else human nature will break its self-imposed restraint. By E. S. Gregg. *Barron's,* June 18, 1928.

Basic Principles of Management

This paper analyzes the place of management in business organization in terms of management:

a. Plans.
b. Executes.
c. Controls.
d. Develops.

Planning includes plant layout, production scheduling, the man load budget and expense budgets.

Management controls through budgets, material control and development refers particularly to development of men.

An appendix to the paper explains a bonus for pattern shop and pattern storage work. By J. D. Towne. Preprint No. 28-5, American Foundrymen's Association, May, 1928, p. 73:22.

How Can One Measure Industrial Efficiency?

Those who worship bigness as a measure of efficiency are guilty of an old fallacy common among socialists. Profit is a generally accepted measure of efficiency and is probably as good as any other test presented by economic society. Profits are due, in the main, to two causes:

1. The difference in site, and
2. The quality of management.

When industry is competitively organized and when a great deal of specialization takes place, what appears to be a strongly competitive industry comes in time to be split up into a considerable number of sections between which there may be little or no competition.

In modern amalgamations the method of measuring efficiency is summed up in the words, "comparative accounting." They set one establishment against another. Such a method of measurement is open to serious criticism since in practice the efficiency of the organization as a whole must be determined far less by the technical efficiencies of its different sections than by the policy of the people at the top.

In a trustified industry, on the other hand, one branch only possesses delegated authority, which is never quite the same as supreme authority. Its objective or external standard of efficiency is only a standard set up by an official possessing limited powers of initiative and experiment. Whereas, the profits test presents a rough measure of efficiency in competitive industry, the method of comparative accounting provides only within much narrower limits a measure of efficiency in trustified industries.

In such cases, too, the criterion of profit loses its value because when a monopoly exists its profits are not governed by the same considerations as the profits of a competitive enterprise.

It is impossible to submit a detailed scheme for measuring efficiency without knowledge of all the circumstances. Many a man believes his establishment to be efficient simply because one part of it is efficient. The important thing is to devise a costing scheme which will give, not a measure of efficiency at any one time, that is, of absolute efficiency, but a measure of the efficiency of one day as compared

with the efficiency of another day. We must remember two things:

1. That a departmental costing system is not doing its work unless it fits into a general costing system for the establishment as a whole, and

2. That an establishment represents a growth, and that the purpose of a costing system is not merely to indicate the cost today, but the relative cost today, the cost today in comparison with five, six, or ten years ago, after making due allowance for changes in the prices of materials, in rates of wages and all the other factors that may mislead the user.

Rarely indeed, however, does an employer think it worth while to obtain historical data in terms of real costs, rather than in terms of money costs.

There is no such thing as an up-to-date establishment. The up-to-date establishment is the next establishment to be built and as soon as it is built, it ceases to be the up-to-date one. By Professor J. H. Jones, M.A. Twenty-Fifth Lecture Conference for Works Directors, Managers, etc., held at Balliol College, Oxford, England, September 29 to October 3, 1927, p. 9:6¼.

FINANCIAL MANAGEMENT

Capital Embargoes

One aspect of the new diplomacy of the United States is the use of the embargo upon certain foreign loans.

The embargo may be accomplished in one of two ways: (1) by actual legal action, such as is the case in France, Belgium and Italy, or (2) by extralegal influence, which is the means used in Great Britain, Japan and the United States.

In the second or extralegal method, the government merely advises the bankers against making certain foreign loans. An embargo accomplished in this way is often as effective as when active legal steps are taken. The investing public, upon learning of the opposition of the government, becomes apprehensive, the bankers in turn run the risk of having a large block of unsold securities on their hands.

The use of the capital embargo is rather recent in the United States. On May 25, 1921, President Harding and certain members of his cabinet held a conference with a number of leading investment bankers, at which it was agreed that the bankers would inform the Department of State in advance of foreign loans that they were contemplating so that it might object if it cared to.

The capital embargo has been used by our government chiefly against countries which have failed to fund their indebtedness to the United States. France, Belgium, and Italy have been the principal debtor nations affected by the embargo.

Immediately after Deputy Louis Marin, in January of 1925, delivered his dramatic speech in the Chamber of Deputies denying the moral obligation of France to repay the American debt, and he was accorded great applause by the Chamber, Washington brought financial pressure to bear. At once, plans for the sale of new issues of French industrial and municipal bonds were dropped by American bankers. The embargo against France was partially lifted in January, 1928, when the Department of State withdrew its opposition to the flotation of French industrial securities.

On several occasions, the capital embargo has been used by the United States to ban loans to support raw material monopolies in their attempt to raise prices. In 1925 the Administration disapproved of the proposed loan to the State of Sao Paulo in Brazil for the purpose of buying up coffee in the various markets of the world and thereby raising its price. In December of 1925 a similar ban was placed upon a prospective loan to the German Potash Syndicate.

In 1927 the Department of State adopted the policy of carefully scrutinizing all

loans to Germany for fear they might interfere with reparations payments.

The constitutionality of the embargo policy has been questioned on a number of occasions. While there is no specific constitutional authority for this practice, yet it is the natural derivative from the right to protect American investments abroad.

Ill-feeling, however, is always certain to follow the use of the embargo. A large part of the world criticism against the so-called financial imperialism of the United States has been caused by the embargo policy and in all probability the injury to American prestige has exceeded any resultant gains. By Benjamin H. Williams. *Political Science Quarterly,* June, 1928, p. 229:20.

Unintentional Falsification of Accounts

Many executives will not permit their accountants to keep records that will disclose actual facts. There will always be executives and directors of business enterprises who will not wish to go to the comparatively slight trouble involved in showing facts. These men will be quite satisfied to go on with their present methods in a complacent belief that the falsification is not material. Then there will be many executives who will not wish the true condition of their company affairs to be disclosed either to their creditors or to their own stockholders.

The falsification to which the author refers comes because accounts deal only with dollars and these are not translated into purchasing power.

The paper sets forth several charts, the purchasing power of the dollar and the Federal Reserve price index, and discusses a number of ways in which the accountant unintentionally falsifies the accounts of a company.

For instance, material might be charged to cost of acquisition at the market price and the difference between one price and the lower cost of acquisition could be translated into an account called "Gain on Purchased Material." That gain on purchased material was not due to efficiency in production and the shop was not entitled to the slightest credit accruing from it.

Many accountants refuse to follow a consistent principle that works both ways. If prices of materials have gone up, they want the cost sheets to show cost of acquisition only. But when prices fall they hop over on the replacement value side of the fence.

When it comes to fixed assets, however, not many follow the same policy. If a client built a plant at peak prices, the accountant is not likely to recommend taking less depreciation as prices of fixed assets fall. Still less would he care to show that loss of value by writing down the plant to market value. Strict consistency demands that he show all the facts, both as to acquisition costs and actual values if these are materially different.

Unless the net earnings, after taxes and true depreciation are deducted, have shown as much increase as the property has appreciated through the inflation of money, the business has really been earning less purchasing power as time goes on than when the stockholder invested a given amount of purchasing power in the business.

The author then analyzes the accounts of the United States Steel Corporation in terms of the principles set forth in his paper. By Ernest F. DuBrul. *N. A. C. A. Bulletin,* May 15, 1928, p. 1035:23¼.

The Failure of Forecasters

Mechanical forecasters of late have singly and collectively failed. They are all constructed on the assumption that what has happened will happen again and in somewhat the same sequence and manner.

New forces in the past three years seem to have pushed forecasting indices aside. Consequently, it may be profitable to investigate some of our old stock of ideas

about forecasting to see why they are failing and to look around for more reliable aids in the business of predicting the trend of trade and industry.

The user of any of these forecasters is as much in doubt as ever if he has to decide not only what the forecaster is predicting but whether the situation is right for it to predict at all.

Industrial leaders in the past five years have given more serious consideration to business statistics and economic theory. The federal government and dozens of other agencies have made available a great deal of excellent business information.

We have not as yet discovered any satisfactory measuring stick for instalment selling, hand-to-mouth buying, recently acquired habits of thrift, rapidly-turning inventories, and so on, through the list of factors which have caused the old indicators to become largely useless. By E. S. Gregg. *Barron's,* May 14, 1928.

Note on the Supply Curve of Capital

Mr. Clower in this article attacks the traditional theory of the economists that the primary motive for saving is to secure the interest; that as the interest rate rises or falls, savings increase or decrease accordingly.

Men save for various reasons. They get present satisfaction out of saving, as they do out of food, clothing, and shelter, it gives them a sense of security and independence. Savings give them social prestige and recognition. Many men save to leave something for their dependents. Again saving may be a form of the collecting instinct noticeable in children and animals. Or it may be the result of long habit. Possibly the most common motive for saving is to make possible a future purchase, to buy a car, a home, a piano.

Men save for rainy days, accidents, old age, unemployment and other contingencies of human existence, but they save with the principal in mind rather than the rate of interest.

To account for the variations in capital from time to time, then, it is unnecessary to assume that interest as a reward for savings plays any great part. By F. S. Clower. *The American Economic Review,* June, 1928, p. 272:3.

Cost Finding Practice for Steel Foundries

This document is a proposed standard cost finding system for steel foundries. The uses of an effective system of cost accounting in a foundry may be summarized thus:

1. To ascertain the cost of making castings.
2. To measure the efficiency of labor.
3. To ascertain the consumption of materials and supplies.
4. To serve as a guide for correcting faulty operating methods.
5. To provide the stimulus of chronological comparative records.
6. To furnish data for intelligent merchandising.

The paper goes into detail regarding the cost divisions of the foundry, the classification of accounts, average and normal costs, monthly summary of cost of production, cost of steel and overhead rates for individual castings, the cost of individual castings, actual costs and estimated costs and profit. Preprint No. 28-3, Cost Committee of the American Foundrymen's Association, May, 1928, p. 25:37⅛.

The Finance Company

The fiscal aspects of installment selling are administered in large part by the type of institution generally known as the finance company. Many finance companies, however, cover fields of activity much broader than the various aspects of installment selling.

The finance company is of relatively recent origin. Prior to its origin some twenty-five years ago, financial service was rendered in main by banks.

In the recent book by Professor E. R. A. Seligman of Columbia University entitled

"The Economics of Instalment Selling," the author reached the conclusion that the first finance company to be organized was the Mercantile Credit Company of Chicago, which was founded in 1905, and that the first company that specialized in the purchasing of automobile paper was the L. F. Weaver Company of San Francisco, 1913.

The finance companies originated as grantors of credit to manufacturers and wholesale distributors upon the security of their open accounts receivable. They served as discount houses for discounting non-negotiable items of indebtedness for which there was no tangible evidence.

In the beginning the account receivable was made an instrument of credit without the knowledge of the ultimate debtor. It was a natural transition from this to the situation in which the instrument of indebtedness was actually handed over to the finance company, yet the merchant maintained collection contact with debtor. Then there came the financing of instalment paper of larger unit value in which the finance company performed the collection function.

The finance company has made possible an enlarged volume of business and banking. In the period immediately following the War the development of instalment selling as a means of distribution was of material aid in taking up the excess plant facilities of the country.

When the automobile industry outgrew its cash sales market it adopted instalment selling. The finance company serviced the paper that was created. It made possible the tremendous volume of motor sales.

In the years following the World War the automobile industry grew tremendously and finance companies multiplied accordingly. In 1924 there were 1,400 of them. The newcomers, however, were of limited resources and unskilled in management so that there has been a marked decrease in the number of companies in the past two years. Last year the number was 573. The three largest companies in 1926 handled 32.6 per cent of the three and one-third billion dollars of business.

The function of the finance company is as follows: It provides the funds to the manufacturer and to the merchant to make possible the extension to the customer of time payment; it performs an important service in formulating for the merchant a sound credit sales plan; discounts his paper promptly; either takes charge of his collections or allows him to collect as an agent for the finance company; at times recovers the merchandise of the dealer when a customer defaults in payment.

The finance company facilities distribution. The commercial bank is not in the position to extend the type of credit that instalment selling calls for. The finance company acts as an intermediary between the commercial banks and the merchants. It is a specialized bank aiming at closer contact with the borrowers' business that better service may be given at lesser risk.

The successive steps in the service of a finance company may be illustrated as follows:

The manufacturer of automobiles has kept his business on a cash basis. The dealer in cars must carry a stock of cars, thereby entailing the use of considerable credit. Under the plan employed by the Commercial Investment Trust Company of which Mr. Haberman is vice-president, the dealer deposits a sum (usually ten to twenty per cent of the wholesale price of the cars shipped to him) to the credit of the finance company. In return the finance company pays the manufacturer the invoice price of the cars; takes title to them; delivers the cars to the dealer under a trust receipt. The dealer accepts a draft, running usually for three months, and is charged with an amount to cover interest, service and insurance. This type of transaction had long been used in financing import transactions, but before the growth of the motor industry, the acceptance and trust receipt were little employed in domestic trade.

As the dealer makes a retail sale the

car is released from trust and proper adjustment of charges made. In this way the dealer pays for the accommodation only so long as it is actually being used. This enables the manufacturer to produce continuously, the dealer to keep a stock of cars on hand.

The manner of handling paper outside the automobile industry is similar to the handling of retail automobile paper, modified to meet the varying conditions. In the case of commodities, however, it is usually desirable for the dealer to make his own collections.

The next step is in respect to retail sales. The finance company makes possible installment selling. It investigates the purchaser and passes on the purchaser paper before the dealer can complete the sale. The Commercial Investment Trust does this within twenty-four hours. After the sale is made, the finance company discounts the purchaser paper for the dealer, primamily in the extension of credit rather than in the form of cash. Following this, the finance company usually takes over the responsibility of making instalment collections. This necessitates a well-organized collection department.

The function, then, of the finance company is not a pure discount phase of finance but it performs the important service of investigating the customer, maintaining a legal department that keeps abreast of the legal changes that affect customers' operations and providing a collection department. The cost of the service is, of course, borne ultimately by the purchaser who seeks time payment.

The finance company is a customer of the bank, not a competitor. Often the paper it has purchased is rediscounted at the bank. The finance company borrows large sums from the bank, in return it acquires many small obligations.

The record of the larger and better organized finance companies now has extended over a long enough period to show that a conservative, well managed company is as stable as corresponding companies in other forms of banking business.

The development of consumer credit has coincided with the period of our greatest economic prosperity. With proper guidance, its normal expansion is assured in the future. To keep it within the fields for which it is adapted, to surround it with proper safeguards is the task of the finance company, acting as an intermediary between the banks and the consumers. By Philip W. Haberman. Address delivered before Forum of Philadelphia Chapter American Institute of Banking, April, 1928, 13 pages.

OFFICE MANAGEMENT

Organization: *Job Analysis, Employment, Pay, Tests*

Psychological Qualities in Leadership and Management

The author classifies leaders as falling into three types:

1. The institutional leader.
2. The dominant leader.
3. The persuasive leader.

Each of these he describes. The institutional leader is one by virtue of the office he holds rather than by virtue of his personal character. He is not characteristic of modern industrial conditions.

The dominant leader (not domineering) is needed in every stage of social development though the modern drift is somewhat away from it.

The persuasive leader is coming to the fore. It is the common view that the leader chooses himself, but this is wrong except in outstanding or exceptional cases.

The paper then discusses tests and expresses the view that the test idea is being overdone. The author outlines the possibilities of a psychological librarian as a

very important part of a works staff and believes that the work of such a librarian would prove extremely valuable in discovering leaders. By F. C. Bartlett, M.A. Twenty-Fifth Lecture Conference for Works Directors, Managers, etc., held at Balliol College, Oxford, England, September 29 to October 3, 1927, p. 21:4½.

Why We Centralized Our Office Work

The general auditor of the Roxana Petroleum Corporation says that the outstanding advantages of centralization are: it brings a better ratio between the number of employees and the work to be done; it facilitates standardization; it carries a concentration of effort; it gives equal distribution of work; it is more economical; and it allows adequate supervision and inspection. By Walter F. Jones. *System,* June, 1928, p. 51:6.

How We Solved the Salary Problem

The salary administration plan of the American Central Life Insurance Company, including forms showing statement of duties, final wage scale, job grade, data, and a table of job grade factors. By Harold C. Pennicke. *System,* June, 1928, p. 27:6.

Does It Pay to Change Jobs?

Young men who seek vocational guidance frequently ask, "Which is better, to remain with one firm a long time and work up, or change about from one firm to another as better opportunities present themselves?" The answer to the question is always a guess. This investigation represents an attempt to provide facts on which to base an answer.

A study was made of the vocational histories of 170 high grade male clerical workers, 20 to 31 years of age inclusive. The number of months they stayed on each of their last jobs was compared with the salary they earned on their last position.

First computations showed a low correlation of 0.23 between length of service record and salary. With the factor of age held constant, however, this correlation is reduced to 0.04. The authors conclude that increase in earning power is likely to depend on such factors as intelligence, initiative, local opportunity and the like, rather than on mere time-serving. By Harry D. Kitson and Noel Keys. *The Personnel Journal,* June, 1928, p. 33:5.

Sources of Supply and Methods of Hiring General Office Workers

Sources of supply are employment agencies, newspaper advertisements, friends of present employees, friends of present customers, friends of company executives, unsolicited letters of application, records of previous applicants and recent graduates of local high schools and colleges. Advantages and disadvantages of each are given. By J. H. MacDonald. *The American Stationer and Office Manager,* April, 1928, p. 16:3.

Rest Periods for Operators Increase Production

A large New York insurance concern has found that operators of adding machines, typists, and other employees handling machines, tire out more rapidly and are under greater nerve strain than ordinary clerical help. The company found that the allowance of extra fifteen-minute rest periods has increased the amount of work accomplished by these operators. These periods are allowed over the entire day, the operators laying off fifteen minutes in batches of fifty. During this time they are perfectly free to visit the rest room, lie down, or read. *Management,* June, 1928, p. 100:1.

Ten Stunts to Help Memory for Names and Faces

Cut out 20 or 30 photographs and write a strange name on the back of each. Learn each one, then shuffle them and see how many you can recall. Associate the

name with the face, rather than the order in which it comes. Have them presented to you suddenly, and say the name as quickly as possible. Many names have a meaning, which helps in associating them with a face. Characteristics also help in association. Tell someone of the last book you have read and be sure that you give him the name of the author and the names of the characters (also the publisher—Ed.). Have someone call out the names of casual acquaintances in fairly rapid succession, and you respond quickly with a description of the person, his work, interests, recreations, or what have you. Further stunts may be invented by the learner. By James D. Weinland. *Industrial Psychology,* May, 1928, p. 208:4.

Administration: *Regulations, Supplies, Communications*

The One-Man Business Is a Success

The one man business is all right, but it has to be the right kind of a man. He must be a leader and not a laborer. The head of a business may be called a president or a chairman of the board, but he is really the *inspiration.* This is the age of the individual, whether he is making pipe tools or solo flights. By Harry G. Nye. *Printers' Ink Monthly,* June, 1928, p. 47:2.

Abolish the Conference!

American business as a whole spends too much time in conference. Such waste will not be tolerated much longer. Information and ideas can be exchanged more quickly, clearly and thoroughly by substituting the memorandum for the conference. Ideas once acquired, and facts once collected will be put in writing. It is hoped that before long a style will be developed that will omit all unnecessary words—adjectives, prepositions, connectives, and even many verbs. The essential aim of the scheme will be to keep facts simple and unbiased. The result will be a rapidity of communication to others and a rapidity of calculation of factors involved and consequent rapidity of decisions. The data contained in a memorandum, as opposed to the conference, can more readily be applied to actual planning. By Bertram R. Brooker. *Printers' Ink Monthly,* June, 1928, p. 29:3.

PRODUCTION MANAGEMENT

Industrial Economics: *Labor and Capital, Legislation, Wage Theory, Immigration.*

Trade Secrets

Those most recent leading higher court decisions are reviewed which disclose how employers may legally restrain ex-employees from obtaining employment with competing firms or divulging trade secrets. In order to be valid, a contract binding an employee not to engage in a competing business must contain no unreasonable requirements. Where no contract exists, a former employee can be restrained from engaging in a competing business if he was employed in an executive capacity. But contract or no contract, the law does not allow divulgence of trade secrets. By Leo T. Parker. *Industrial Power,* April, 1928, p. 54:5.

Progress and Plenty

It is evident that it is impossible to distribute goods to people at the present time at the rate at which we can easily produce such goods, unless we adopt constructive plans far beyond anything ever before at-

tempted. Man must plan his own prosperity, and in order to do so it is necessary first of all to find the facts in the situation. In addition to facts about unemployment, it is most important to gather facts in regard to changes in retail prices. The real difficulty is in obtaining satisfactory data, which could be overcome if the Government undertook to collect it. The cost of this would be small compared with the cost of enforced idleness. The slump of 1920-21 caused the United States a loss of more than ten billion dollars, whereas the cost of gathering and using needed information would not be one per cent of that.

If the United States Government should announce its intention to use all its fiscal operations as far as feasible, during the next twelve months, to achieve prosperity, people would at once expect that business would be good; little danger of inflation or deflation; just an orderly market, keeping up with production. And because of that expectation, everybody would so act as to make business good. But we cannot expect business men to favor further Government control of business. The proposed plan would not give the Government new powers; it would merely provide for the more intelligent use of its present powers, with less interference in business than at present. By William Trufant Foster and Waddill Catchings. *The Century Magazine*, July, 1928, p. 257:12.

The Sherman Act To-Morrow

This article is a sequel to a paper by the same author in the March issue of the *Atlantic Monthly* entitled "The Sherman Act To-day" in which he pointed out some of the baneful effects of our so-called anti-trust laws.

The author suggests that the Sherman Act be repealed, not amended, and that in its stead a new law be enacted that would:

1. Retain the anti-trust and anti-monopoly provisions of the Sherman Act.

2. Change the "restraint of trade" phrase of the Sherman Act to "unreasonable restraint of trade."

3. Modify the "substantially lessen competition" of the Clayton Act to "unreasonably lessen."

4. Adopt the principle of the Australian Industries Preservation Act which would shift the burden of proof from the plaintiff to the defendant.

5. Provide punishment in the form of either a warning to "cease and desist," a penalty, or even a criminal suit. By James Harvey Williams. *The Atlantic Monthly*, June, 1928. Reprint. 10 pages.

Labor Legislation and the Business Mind

We are dealing today with a different economic situation from that in the past and also with a different psychological understanding. But even so, there is still a large group of industrialists who regard social legislation as foolish and unnecessary. To hasten the process of enlightenment in this respect there are two courses open, one to educate the embryo business man at school and university; the second to cultivate and develop the newer type of business executive already in active life. The obstacles which have been encountered in the past in connection with labor legislation must not be allowed to exert a bad influence upon business minds ripe for a new attitude. If our capitalistic system is to achieve a real success some means must be found of bridging the gap between the social reformer and the business man. By Sam A. Lewisohn. *Canadian Congress Journal*, June, 1928, p. 16:3.

Over-Production and Progress

Strictly speaking, the problem set by the increasing mechanization of industry is not so much one of unemployment in the usual meaning of the word, as of the maladjustments incidental to rapid industrial progress. Excess capacity is essential to continued economic progress, for the more easily we can satisfy current needs the more time and capital can we devote to the creation of new forms of consumption and the satisfaction of new wants.

Any measure which "makes work" by reducing the output per worker will react unfavorably on the flow of commodities and services which is the real source of wages and other income. Displaced labor must, therefore, be directed into channels cut out for it by new commodities and services, and by old commodities the demand for which is highly elastic.

Productivity per worker will continue to increase, and further economic progress will depend on a continued expansion of human wants. Hence, the problem of increasing mechanization and labor displacement must be solved through a fostering of inventive ability, security against political nostrums, and a definite alliance of business with scientific research. By Stewart Macdonald. *Barron's,* June 11, 1928.

Employment: *Classification, Selection, Tests, Turnover*

Why the College Man May Be Slow to Fit the Plant

An analysis of the college man's attitude. He has never formed efficient work habits, is impatient and destructive in criticism. When he becomes constructive, he begins to learn tolerance. He begins to see that all workers are not on his level in ability, and finds he must allow a business to be carried on in a human and therefore imperfect way. The college man must be seasoned, and cannot acquire efficient work habits until he has become a veteran of longer experience and service than he cares to contemplate. By E. Grosvenor Plowman. *Industrial Psychology,* May, 1928, p. 202:4.

Why Not Budget Labor?

How the Portland Gas & Coke Company anticipates its labor requirements for a year, each department supervisor listing his own needs. Since this budgeting plan has been in use labor turnover has been cut in half. By D. E. Buyers. *Factory and Industrial Management,* June, 1928, p. 1205:1.

Training and Education: *Schools, Libraries, Apprenticeship, Employee Publications, Bulletin Boards*

What Foremanship Training Can Do to Pull Down Unit Costs

Many managers have found to their surprise that adequate foremanship training actually reduces manufacturing costs. A handful of companies—Delco-Light and Oakland Motor among the leaders—have obtained definite dollars-and-cents profits from training their foremen.

Training pays because it enables the foreman to qualify himself to operate his department at a profit. The foreman in the plant is a key man; he can open or bar the way to manufacturing profits. General managers, works managers, plant superintendents are beginning to realize this.

If the foreman gives the machinery a little better care, if he saves a little spoilage, or if he increases the quality of the work his men turn out, he makes a substantial contribution to corporate profits.

Not long ago an industrial engineer of national prominence was forced to admit that many ills in the industrial companies of his experience were due to poor foremanship. Formerly the foreman was selected because of his superior workmanship. He was not trained to be a leader. He failed in his new responsibility. Many corporate employers failed because the foreman failed.

The present-day foreman must know more than material. He must know accounting, money, and men. He must work hand-in-hand with the management to assist in profit-making.

Adequate foremanship training enables a foreman to make a better product at a lower

cost. The training of the foremen at Delco-Light Company and elsewhere has proved that these results can be obtained. By H. L. Neilson of Delco-Light Company. *Industry,* June, 2, 1928, p. 1:2.

Apprenticeship in Building Construction

The recent building activity throughout the country has emphasized some unprofitable conditions in the building industry growing out of the war-time practice of making mechanics overnight. To determine to what extent apprenticeship is a factor in the industry, and what effect the agitation for a revival of the apprentice system is having, the Bureau of Labor Statistics has made an investigation in 19 cities. Sources from which information was drawn were local building trades unions, trade associations of employers, builders' exchanges, school authorities, and representative individual employers. Among the latter were union and openshop men, and contractors who do and those who do not employ aprentices. Bureau of Labor Statistics: *U. S. Department of Labor,* April, 1928, 133 pages.

Training Minor Operating Executives

Foremanship is a required subject for men enrolled in this operating training course. The first step in organizing for the study of foremanship is to enlist a smaller group of leading foremen—6 to 10—called the foremen's cabinet, which serves in an advisory capacity. The conference method is used. The courses vary in length as follows: Foremanship, 10 weeks; economics, 24 weeks; business law, 18 weeks; metallurgy, 72 weeks; business English, 16 weeks; public speaking, 16 weeks. Another phase of the program for the development of minor executives is a course in company products, processes and policies. The company undertakes to keep its foremen posted on business conditions in general and the company's business in particular. Other means of communication are a Foremen's Forum and the Armco Foremen's Bulletin. *The Iron Age,* June 14, 1928, p. 1683:1.

Education and Industrial Efficiency

This address emphasizes the importance of closer co-operation between the world of business and the world of education in the choice of boys and young men. Educational officials ought to be consulted more as to the character and intellectual attainments of boys who are taken into employment.

Industry, having become daily more complex, demands a higher degree of well-directed intelligence. The foreman must in the truer sense of the word be a leader, an educator and director of youth. By Rt. Hon. H. A. L. Fisher. Address delivered at Twenty-Fifth Lecture Conference for Works Directors, Managers, etc., at Balliol College, Oxford, England, September 29 to October 3, 1927, p. 5:4.

Education for Management

It may be said that this country in its development needed first the assistance which could best be rendered by the technical and engineering schools. With the aid of these schools, however, we have witnessed such a development of American industry and business that very many new problems have presented themselves which, in turn, have brought into existence, mainly since 1900, a large number of schools of business. Careful analysis of the types of problems which present themselves to students who graduate from engineering and business schools shows that there is a need to give to both groups a perspective of the problems in both fields. This would appear to be feasible by curtailing somewhat rather highly specialized courses in undergraduate curricula, and by substituting fundamental courses, and in some instances special courses in engineering and business, thus making it possible to have further effective correlation of graduate courses and of projects of research. In the graduate work, university administrators have an opportunity to make a contribution to education of the first magnitude by providing joint seminaries in which

graduate students in engineering and in business may make reports on their graduate study and obtain helpful criticism from men familiar with all phases of their investigations. This plan will not be of much consequence until definite credit is given for it in the teaching schedule of the faculty members who participate in it. Likewise, the continuation program here suggested would keep the instructors of both colleges in touch with men in the industries. It would vitalize our instruction and would aid materially in giving to students the broad point of view which the dynamic problems of our complex industrial and commercial life demand. By C. O. Ruggles. *Bulletin of the Taylor Society,* April, 1928, p. 87:5½.

Benefit Systems and Incentives: *Group Insurance, Pensions, Vacations, Profit Sharing, Wage Plans, Suggestions, Stock Ownership*

A New Application of Old Age Pensions

The Detroit Union Trust Co. has an optional old age independence plan for its workers. To each employee who becomes a depositor in this plan to the extent of 3 per cent of pay monthly, the company will give each year a certificate representing a retirement income payable for life at age 65 for men and age 60 for women, in the amount of 2 per cent of the year's salary. This retirement income accumulates, so that at retirement age each member of the plan will have an annual retirement income of 2 per cent of the total salary from the beginning of the plan until the retirement. The maximum yearly retirement benefit is $6,000. The plan also provides an opportunity for each employee to make additional monthly payments for an annuity for himself, entirely independent of the service annuity for him by our company.

There is a disability feature which assures each employee a reasonable compensation if he is unable to work. By A. Douglas Jamieson. *Industrial Psychology,* June, 1928, p. 258:2.

Bonus System for Foremen

Features of the A. O. Smith Corporation's bonus system for foremen are: Taking each foreman into its confidence in so far as controllable burden and labor expenditures in his department are concerned and giving him special information in respect to cost and economy of plant operation. Forms showing how the bonus is calculated are given. By Rogers A. Fiske. *The Iron Age,* May 24, 1928, p. 1445:3.

We Pay Our Workers to Keep Production Flowing

The comptroller of the Abbott Laboratories describes a compensation plan that makes the whole plant pull together to get out more work in less time at lower costs. By James F. Stiles, Jr. *Factory & Industrial Management,* May, 1928, p. 964:3.

Gang System Almost Doubles Production Per Man

The gang system of the Continental Motors Corporation was introduced in 1924, with the primary object of fostering a team spirit that would encourage every man to do everything in his power to increase the earnings of his department or gang, rather than to stand idly by at times because he happened to be caught up with his particular job. Rates are established each quarter and the workmen are given a guarantee that those rates will not be changed for three months. By the end of a period, however, changes and improvements usually have been made in some department or operation that warrant a downward revision of rates. If the workmen fail to earn as much as they should under the new

scale, and if the failure has not been their fault, the difference between what they would have earned according to their past performance and what they did earn is made up to them. By the gang system of payment it has been possible to reduce the inspection force almost 50 per cent. Yet the quality of the product is much higher than formerly, as proved by fewer rejections under test and fewer complaints from users. By P. V. Osborn. *Management*, May, 1928, p. 50:6.

The Stock Market and the Employee Stockholder

In times of depression many employee stockholders sell out. One company which had 27,800 employee stockholders early in 1920, found that less than 650 remained on the books after the severe depression of that year. Many a manufacturer whose stock is listed, and who started a profit-sharing or stock ownership plan in good faith with the idea of improving the morale among his employees, has had to explain the whys and wherefores of stock market operations to workmen with little financial education. Nevertheless, a recent survey lists no fewer than 400 big organizations which are still maintaining their profit-sharing plans. The Rochester Folding Box Company has tried to cut down the risk and still allow employees to profit from earnings by providing that the special employee stock shall be paid 8 per cent before other stock can receive any dividends. The American LaFrance and Foamite Corporation and several others sell stocks to the employees five, ten or more points below the market price and add a certain percentage per year, for five years or more, to the regular dividends. In each case, the value of the stock might decline considerably before the employee would fail to get at least bank interest on his money. On the other hand, many companies state frankly that the employee assumes exactly the same risk as any outside investor. By Roy Dickinson. *Printers' Ink*, June 7, 1928, p. 41:5.

Rate Setting: *Operation Study, Time Study, Motion Study*

Methods of Rate Setting

The main points emphasized in this discussion are as follows:

1. That the trade union's objection to payment by result is largely due to the frequent changes made in rates. Often this is a very old story.

2. A piece-rate, when once definitely fixed, should not be altered unless it can be shown that changes have been made in the machines, in the material used, or in the processes.

3. The basis of all rate setting should be mutual confidence. Confidence must be established if a system of piece-rates is to work satisfactorily.

4. It is possible to have workers on time rates alongside piece-rate workers, but wherever the output of workers can be *measured* it is advisable that they be put on piece-work.

5. In piece-work it is essential to see that the quality of the product is kept up to standard.

6. While a just system of payment by results is valuable, something is needed in order to get the full and complete co-operation of the workers.

7. Care should be taken to see that piece-work does not result in overstrain of the adolescent workers. Rest pauses are found advantageous.

8. A member of the Conference, in criticising payment by results, said he was convinced that a much better method of remunerating workers would be to pay an *economic* wage and to set up some system under which one could get a sufficient volume of work from the whole factory to cover this wage. Opener: George Crossley. Twenty-Fifth Lecture Conference for Works Directors, Managers, etc., held at Balliol College, Oxford, England, September 29 to October 3, 1927, p. 38:3½.

Smoothing the Wrinkles from Management: Time Study the Tool

The improvement of any business, whatever its nature, requires a broad treatment dealing with finance, marketing, budgeting, master planning, inventories, production control, standardization, wage determinations and cost control. The development of time standards is only one element in the broad improvement program, an element of vital importance but one that should not be treated indpendently nor to the exclusion of the other elements. It should rather be part of a broad conception which includes, allows for and develops all aspects of the program.

This paper is designed, first, to present fundamental principles and practical methods of using time studies in the various functions of a business and, second, to show specifically the place in industry of time measurement and job analysis as a tool of management.

The article then analyzes the uses of time study and essential principles of time study, the crime of improper time study and illustrates by reference to various industries.

In discussing rules for time study, the author covers organization, personnel, implements, making ready, selecting workmen for observation, approach to the operator, making the time study, necessary delays, continuous timing and computing standard times. By Sanford E. Thompson. *Bulletin of the Taylor Society,* April, 1928, p. 69:18.

Labor Relations: *Collective Bargaining, Employee Representation, Arbitration*

Some Principles Underlying the Interpretations of an Industrial Relations Agreement

This article discusses the agreement between the Amalgamated Clothing Workers of America and the manufacturers of men's clothing in Chicago including the separate Hart, Schaffner and Marx agreement. It emphasies the elasticity of the agreement and the extent to which past practice under the Hart, Schaffner and Marx agreement has been incorporated in the market agreement.

One of the first decisions of the impartial machinery was to the effect that the terms of the agreement were to be loosely construed. In this fashion, the way was left open for such modifications of and additions to the terms of the agreement as later experience might find necessary.

Furthermore, the boards ruled that the market agreement was a synopsis of the Hart agreement and that all decisions of the Hart, Schaffner and Marx Board of Trade were applicable to the balance of the market. A process of trial and error had worked out the surest procedure to be followed by the trade board at Hart's, and while certain adjustments necessarily had to be made to transplant the procedure in vogue at this house to the bulk of the market, nevertheless, this transposition was a comparatively simple matter.

The trade board further ruled that past practice was to apply in the market, unless such practice was modified by joint agreement or by decisions of the trade board. In this fashion the dangerous innovation of revolutionary changes in procedure was obviated, until such time as absolute necessity forced the issue.

The trade board has also placed its stamp of approval upon negotiated settlements, as making for a better working relationship than decisions of a third party, no matter how enlightened those decisions might be. In this connection, the board has often assumed the burden of carrying into effect, by its decisions, the understandings privately reached between the parties to the agreement, thus relieving the union of the onus of making concessions.

The defense of a cardinal principle of trade unionism—the protection of members'

jobs—led the impartial machinery to formulate the "Doctrine of Need." Under this principle, members of the union were protected in their employment, even in the face of drastic reductions in the volume of work. Furthermore, the trade board has tended to discipline by methods other than discharge in times of business depression.

The above five principles have in general guided the boards in the formulation of their decisions. But underlying all those decisions, and perhaps more fundamental than any of these principles, has been the determination to mould a working relationship. This has been demonstrated in the acceptance of jurisdiction by the trade board in certain cases on the grounds of expediency, and by a general tendency to relate the nature of its decisions to fluctuations in the business cycle—a process of tempering the gale to the shorn lamb. By Wadsworth H. Mullen. *Harvard Business Review,* April, 1928, p. 293:10½.

The Development of a Works Committee in a Steel Rolling Mill

The functions of the committee are purely advisory. It is urged that all grievances shall be immediately reported to the committee, providing the department foreman has been consulted in the first place and has failed to bring about a satisfactory settlement. The committee discusses all questions relating to general shop conditions and amenities, working conditions and accidents, in fact, all questions affecting the workers. If any matter can not be satisfactorily adjusted it is referred to the works council.

This has a membership composed of five members of the works committee, five members of the foremen's committee, the management and the directorate. In the experience of this company, J. J. Habershon & Sons, Ltd., the workers' committee has been very effective. By F. E. Featherstone. *Welfare Work,* May, 1928, p. 82:2.

Shop Organization: *Planning, Methods, Job Analysis. Standardization, Waste*

What Relation Has Obsolete Equipment and Over-Capacity to Profitless Business?

A study of production costs by a prominent machine tool builder in Connecticut revealed the fact that his manufacturing cost had been made excessively high by the use of antiquated machinery, and methods, by unnecessary handling charges from widely separated departments, and by the carrying charges of idle floor space and idle equipment.

Unnecessary handling was reduced by consolidation of departments under one head and on one floor. The obsolete machinery was replaced by more adequate and less extravagant machinery. The manufacturing cost was reduced 30 to 40 per cent. A new price list based on these savings might logically create the impression that they were lower than the articles could be made for and produce a profit. It is believed by many that statistics are needed by which the problem of business failures can be studied. Such information as the age of machines, the time in operation, the type and kind of equipment, would furnish a basis for measuring the importance of keeping the right kind and the proper amount of machinery in step with production standards. *The Society of Industrial Engineers' Bulletin,* April, 1928, p. 11:1.

The Schedule Fallacy in Pricing Castings

Mechanically the foundries have kept pace with other industries in improving their product and method of manufacture. The use of production equipment and labor-saving devices is widespread. The modern foundry compares favorably with other plants in the use of efficient equipment for

economical production. It is in the merchandising of its product, however, that the foundry industry has fallen behind. The weakest spot today in the industry as a whole is unintelligent estimating and an obsolete system of pricing or selling castings. If we rectify the method of pricing we will also improve our standards of quoting.

The present system of selling castings on a sliding schedule based on weight is unsound in theory, has been a costly practice, and should be abolished.

The author discusses then the actual foundry costs in terms of cost of small orders, molding costs, core-making costs, cleaning costs, metal costs, etc. By J. J. Ewens. Preprint No. 28-4, American Foundrymen's Association, May, 1928, p. 63:9⅛.

MARKETING MANAGEMENT

Chain-Store "Issue" Arises

Monopolistic control of retailing is the keynote of charges against chains. Allegations range from indiscriminatory price-cutting to exaction of preferential rebates.

Over 15 per cent of all retailing is now done through the 75,000 stores of the chains and it is predicted this will be doubled in another five years. The gain in prospect will be a displacement of other agencies.

Approach of the saturation point in major cities is now being followed by faster development in smaller centers. Already 72 per cent of retail grocery business in New York is in the hands of chains.

For once, mass sentiment, if aroused, may be with the "upper-dog." Patronage of the consumer indicates probable attitude toward efforts to hobble chain merchandising. By Aaron Hardy Ulm. *Barron's*, June 4, 1928.

Some Impressions of the British Trade Association

There has been a remarkable growth of trade associations in Great Britain since the War. The causes of this movement are analyzed and the character of the work of the trade associations outlined, including resale price maintenance, price agreement, research and mobility.

The future depends on the development of mobility, that is, the power of adjustment to new conditions in world competition. The history of the trade association movement during the past decade suggests the extent to which the British business man is capable of change. He is moving in the direction of associated effort and increased efficiency. In many cases he is moving rather rapidly. By Edgar L. Heermance. *Harvard Business Review*, April, 1928, p. 304:9.

The Economic Contribution of a Chain Store to Retailing

The President of the J. C. Penney Company sets forth a few outstanding factors concerning the chain store:

1. First of all, let us remember that there is no essential difference between a single store and the chain store unit. Aside from the large buying power that inheres in the chain store organization, the relationship of a chain business to the public is established in terms of a single retail store in a given community, for at that point the contact takes place between the organization and the customer.

2. There is nothing complex or intricate about chain store retailing. There is no magic mystery in it. Any merchant can go forward from a single store and with a well trained man to take command, open a second store, gradually increasing the units into a chain if he so desires.

3. The chain store, exactly as the in-

dependent retail store, depends for its success upon the observance of a few fundamental principles. They are: 1) scientific training of the entire personnel; (2) intelligent buying; (3) rapid turn-over; (4) favorable location; (5) knowing the merchandise needs of the community; (6) a satisfactory and well trained store personnel and (7) elimination of all unnecessary operating expenses.

4. All merchants, as a collective group, are a community's business asset. As a group they attract trade, each participating in the total volume of trade in proportion to the values given and service rendered. Their relationship is found not in competitive contention but in mutual development that will benefit all alike.

5. It is not only possible, but essential, that men in business shall work toward righteousness. This is not a cant phrase nor a holier-than-thou attitude. It is the one and only objective for human effort.

6. The more men work together for the improvement of business methods and for the purification of business ethics, the more prosperity there will be for all concerned.

7. It is an indisputable fact that men can not combine to keep prices up for their selfish interests, imposing upon the public through a high-handed system of piratical operation. The logical effort must be to lower the cost of merchandising and to bring goods within the purchasing power of a greater and yet greater number of consumers.

8. Honest merchandising—and in this I apply the word honest to methods, goods, prices and all business relationship—honest merchandising creates mutual well being to the two great factors in the Partnership —the Business and the Public for whom it is conducted.

9. To put it briefly, the chain store system is of economic value to a community to the extent that it provides better values, insures regular rentals, stabilizes real estate values, makes sound credit, furnishes regular and dependable employment, permits participation in some way in profits, seeks to serve an ever widening trade area for the natural type of merchandise that it needs, educates and trains its working personnel into a deeper understanding of community service and the best methods of merchandising procedure. By Earl C. Sams, President, *J. C. Penney Company, New York,* 1928, p. 3:20.

Sales Promotion: *Letters, House Organs, Advertising*

Some Aspects of Business Control by Advertising Agencies

It was once considered that the function of an advertising agency was to create copy and to spread publicity which would reach all market classes. Now, however, advertising agencies are functioning as research, market survey, sales plan, and sales direction experts largely because in many businesses the safeguarding of sales operations by merchandisers has not progressed to any such point as the safeguarding of plant management and production practice. Not all executives consider that this practice is desirable. Any situation that takes a business out of the control of its owners, or weakens the strong grasp of its own executives is out of line with modern business management. When business has its sales development department as adequately organized as its research laboratories it will carry its own insurance against market hazards. By Sterling Beeson. *Advertising & Selling,* May 30, 1928, p. 22:2.

Use and Limitations of Radio Advertising

Radio has now a definite place in ad vertising. It can get a piece of business news to millions of people instantly and at low cost; it can create a personality; it can build a fund of good-will; it can

make people read other forms of advertising from the same company with greater interest. But it can do these things only when the entire plan is carefully co-ordinated. The program must be in keeping with the character of the house and the people it is desired to reach. Not all lines can use radio to advantage, but in certain fields it has large possibilities. As a direct selling medium it should be used with caution. Report No. 270. *The Dartnell Corporation.* 39 pages.

Survey Shows How Films Cut Sales Costs

An investigation of film uses in the sales plan reveals that many firms are equipping their salesmen with projectors for use as a direct selling aid. The Warner Manufacturing Company (trucks), is a firm that has found films valuable because its products are too heavy to carry. Sherman and Sheppard, manufacturers of heavy machinery sold for export, is another company making use of films to take the place of samples. The Owens Bottle Company report much the same experience. The Olds Motor Works has recently gone into the use of projector machines extensively. The Oldsmobile plan makes the following uses of films: 1. To sell the ultimate buyer of the car. 2. To help factory salesmen sell dealers and central distributors not company owned. 3. To help branch distributors sell their own dealers. 4. To help train salesmen all down the line. The International Harvester Company reaches the farmer during the winter months by giving a one day's entertainment and power farming program in each of the 15,000 dealers' places of business. Other companies mentioned as using films in sales work are the Jewett Refrigerator Company, the Delco-Light Company, Packard Company, and the American Brass Company. By George H. Pelton. *Sales Management and Advertisers' Weekly,* June 2, 1928, p. 925:5.

Salesmen: *Selection, Training, Compensation*

How American Radiator Gives Old Men New Sales Ideas

Few companies have any definite method for bringing to older salesmen in their organization the benefit of the training which they give to the newer salesmen. Because of this, in many organizations there are men who have been with the company for many years that are handicapped in applying the newer merchandising and selling ideas to their work.

In 1926 the sales department of the American Radiator Company made the experiment of training senior salesmen. Fifty-four men were selected from the various branches, including not only territory salesmen, but also a few assistant branch managers and several sales engineers, for a two weeks' session. The work of the sales meetings was divided into the discussion of heating products, tests of products and factory studies, and sales and merchandising of heating products.

The salesmen went back to their branches enthused over the company's policies, products and sales plans, and felt that the time taken from their territory had been well spent. Whether the meetings are held at general sales headquarters or whether they are divisional sales meetings, the essential point is to have a chairman with a carefully worked out program, and to make it possible for the salesmen to contribute to the meeting rather than to be preached at for the entire time. By R. C. Hay, *Sales Management and Advertisers' Weekly,* May 26, 1928, p. 853:3.

A Sales Training Plan That Really Works

The Pacific Mutual Life Insurance Company has developed a plan for helping new salesmen earn while they learn. Half a day's cold canvass selling under the instruc-

tion of a field supervisor, alternating with half a day's office instruction and study, enables the new salesman to sell one policy until he learns the business as a whole. Out of ten applicants, nine men are rejected in the first tests, and the cold canvass system eliminates a high percentage of those selected for training, but the men who survive the training usually succeed. By Robert F. Freeman. *Sales Management and Advertisers' Weekly*, June 2, 1928, p. 917:2.

Survey of Books for Executives

Psychology for Executives. By Elliott Dunlap Smith. Harper & Bros., New York, 1928. 262 pages. $3.50.

Extreme claims on the part of some psychologists, combined with a certain overemphasis of the technical side, have made many industrialists feel that there is little which a practical man can learn from the new and developing science of psychology. Mr. Smith's book should do much to dispel such ideas; in fact it should create an extremely sympathetic and receptive attitude toward his subject. Certainly any intelligent executive is interested in the "whys" of the human beings around him; just as he is interested and mystified by his own nature, and it is in the field of psychology that he can find much which will help him solve the puzzles which have intrigued him. Not only that but he will be stimulated to think along new lines and perhaps himself make contributions to the science as Mr. Smith has.

The three chief subjects which are considered are: habit; control of desires; and the group. "Habits and how to handle them" and "Habit and thought," are the second and third chapters. Habits to Mr. Smith are the key to the direction of life. In his introductory chapter he says:

"In industry we can, therefore, look to education, environment, and example to develop through the power of habit the ability and character of employees. Likewise we can look to industrial leadership to transform through habit the unfavorable forms of expression of the common human desires into forms conducive to industrial efficiency, well-being and peace . . .

"The antagonisms of capital and labor; the bitterness of labor disputes; soldiering or sabotage; rate-cutting or abuse of power, are not the faults of our common human nature, but of the habits, which from experience and example we have built up to give that human nature expression. Through the long and powerful influence of factory example and environment, the executive determines in large measure the directions in which the 'human nature' of his employees will find outlet."

Throughout these chapters and the later ones there are constant applications of his ideas to industrial situations and illustrations of various points from industry.

Suggestive statements in Chapter II are excerpted:

"As habits develop, consciousness thus recedes bit by bit from component acts to the things one is accomplishing. As each new habit is developed, conscious attention is freed from details and can devote itself to the larger problems. Good habits thus enable one to go forward to new tasks freed from the struggle with the old . . .

"If an employee or executive is unduly worn out by his work, there is considerable probability that he is consciously directing what should be habitual. Relaxation and freedom from self-consciousness are important elements both in skill and in the avoidance of fatigue . . .

"Regardless of how much better a new path may be, or how much the conditions have changed under which the old path was formed, a habit never of itself retraces

its steps and starts over in a new direction. Thorough-going changes result only from conscious observation and thought. On this account the careful choice of what things shall be made habitual is of vital importance."

An extremely valuable set of maxims for aiding in developing or amending habits is given under the following heads: (1) Don't preach. Teach by example, (2) Make a bold initiative, (3) Provide prompt exercise for the new habit, (4) Prepare for forseeable temptation, (5) Fortify the new habit, (6) Do not attempt too much, (7) Permit no exceptions, (8) Correct all transgressions.

Good material is given as to attention, monotony, and strain in Chapter III. A particularly interesting point is the one made in connection with the effect of monotonous work. Mr. Smith says that work which requires almost no attention will have a stultifying effect so that it will be difficult to make proper use of leisure time. The present tendency is toward mechanizing tasks so thoroughly that one man is expected to tend several machines and his attention is held by the numerous demands on it. Through such methods the dangers of monotony are being lessened and the creative impulse which produces low cost, high quality, contentment, a desire for self improvement, interest in the job first for selfish and then for altruistic motives, et cetera, will begin again to stir. May that day speed!

Chapters IV and V, "The forces of the personality," and "The problem of self-control" are not as successful as those which precede and follow them, chiefly because they deal with subjects so complex that a non-technical treatment is not adequate. Customary terms do not carry the subtle distinctions which the modern psychologist deals in. There is much of value, however, concerning reverie, fatigue, conflict of desires, fixations, and rationalizations. These chapters may, however, fail to have the effect Mr. Smith desires because they may tend to frighten rather than to stimulate the "practical" industrialist.

The last two chapters, "The effect of the group in industry," and "The integration of conflict" are extremely worthwhile, and perhaps the most helpful in the book to an executive although the earlier chapters are essential to their understanding. The following quotations give some idea of the ground covered:

"The material of strong crowd spirit consists of a common point of view and of strong common desires that are exposed to frequent stimulation. Any department or factory is thus a fertile breeding-ground for crowd feeling. The employees have common desires in regard to working conditions, treatment by the management, and pay. These desires are constantly exposed to stimulation by the management, and are almost inevitably kept sensitized by recurrent stimulation without adequate outlet . . .

"The whole mass of feeling and ideas tends to work itself into a common circular system of thought . . .

"The process goes forward without the normal interference of the environment, because the environment is going along with it. Each person is protected in his crowd thinking and conduct by the identical conduct and thinking of the others. To break the fixation of attention and ritualistic thinking in order to look at the situation free from self-deception requires great courage . . .

"With this incontestability of the crowd creed goes a sense of self-righteousness and exaltation. Because his suppressed wishes assume a validity they do not have when he is alone, an individual always feels temporarily magnified when in an active crowd. What is desired has changed to what is right . . .

"Since the employees in any department, or company, are potential crowds ready to start into activity, almost any grievance, even though personal, may become the symbol to some group of violation of their common "rights" (the term by which a strong crowd desire is usually designated). Obviously, then, the first step in preventing

destructive crowd spirit is to avoid possible causes of common resentment . . .

"Because in industry conflicts of desires are inevitable and may be a great force for good, and because such conflicts exact so great a toll when they become destructive, it is important to know what causes conflicts to acquire a destructive character . . .

"In general, so long as the right to work for satisfaction is granted to an individual or a group and the opportunity to do so is open to them, their aroused energies will expend themselves upon that work. In general, whenever the right or opportunity to work for satisfaction is denied, the aroused energies turn themselves against the individual or institution that has denied that right or closed that opportunity. It is thus not that the desires of any group of individuals are denied by another that causes the conflict to become destructive. It is because they are denied in such a way as to leave no opportunity except through domination for further effective effort toward their satisfaction . . .

"In general the basis of solving existing or incipient inner conflicts is seeking to find or contrive the answer that is best for the whole personality, including the rebellious desires. It is a process of integration—of making an organic whole out of the confusion of conflicting forces . . .

"This integration of a very deep desire that is in rebellion with the personality, of course, is a long-drawn-out and difficult task. By this method, however an executive can do much to guide forces in his own or his subordinate's personalities into constructive channels before the inner rebellion becomes uncontrollable. To a considerable extent this method has been intuitively followed by capable parents and teachers throughout the ages. The sexual desires of boys have been taught to express themselves in chivalry; the desire for possessions has been taught to seek outlet in work; the desire to excel has been diverted from money-spending or money-making to public service . . .

"Employee representation or similar means for providing articulate expression of employee opinion especially in companies of large size serves an important function by bringing the desires of the workers and the objective facts as the workers see them, into the factory councils. It enables decisions relating to the employees to be made in the light of adequate knowledge of the employees' wants and points of view. It provides both the management and the employees with means of seeking a constructive solution of their problems in the light of a knowledge of the full situation, instead of seeking to establish by force determinations arrived at from a partial knowledge. However much one may feel that the point of view of the employees is mistaken, however wrong one may feel the point of view of any integral element of the situation to be, no truly constructive integration of a conflict can take place unless all the vital points of view actually concerned in its solution are expressed."

These are long quotations but this reviewer feels he can better emphasize the strong points of the book by their means rather than by a restatement in his own words. He has no apologies for the fact that he is a "practical" business man who has many times been frightened away from what has later proven to be worth-while suggestions by the fact that they are sponsored by doctrinaires who have too slight a contact with the wheels of industry. That, however, is the course of all progress. The thinker must stay in advance of the doer. Mr. Smith's book is commended to the attention not merely of thinkers on industrial matters but to the captains of industry who have it in their power to accomplish progress. When the world of affairs catches up with the march of thought, our civilization will have become perfect—or thought stagnant.

An appendix gives some suggestions as to methods for studying and teaching practical psychology, and there is a carefully chosen bibliography which has descriptive notes as a guide to choice of volumes.

CYRUS MCCORMICK, JR., *Vice-President, International Harvester Company, Inc.*

Economic Problems and Cases. By Calvin C. Thomason. The Rochester Athenaeum and Mechanics Institute, Rochester, New York, 1928. 106 pages.

The Mechanics Institute of Rochester has prepared the first of three year units of a liberal curriculum in economics.

With a student body composed of young men of college age and high school graduation or its equivalent in experience, in co-operative or half-time courses preparing directly for supervisory positions in industry, the Mechanics Institute set out some five years ago to develop a liberal curriculum to supplement the technical work formerly prevailing more exclusively.

The time allotment was naturally quite limited. The field of subject-matter was obviously very wide. The vital interest of the students was with practical problems rather than with bookish lore. To meet this situation to the best advantage the Institute took the following steps:

1. They set up two sets of criteria for the selection of the course content
   a. Adjustments
   b. Mental traits, expressed as "Recurrent Themes."

A planning board was devised whereby problems that seemed worth while might be checked against these sets of criteria. For this purpose our planning board for curriculum design was drawn up. They then studied the nature of the problems that were brought from industry to the classroom by co-operative day students and foremen in evening classes. They also studied management literature, standard texts and attended management conferences for further light on problems that should find a place in the courses.

2. Since method is quite as essential a consideration in time economy and efficiency of instruction as content, they devised a Methods Inspection Chart for checking and criticising every point in administrative classroom procedure. The multiple-case arrangement was invented.

For foremen, these two courses seem to be meeting with success since all the foremen who started in two years ago have finished their second year and the class beginning last September finished the course with but one loss. Economic Problems and Cases is the first of two well-developed courses. An interesting feature of the foremen's reactions to this particular course, which is given to them in their second year was that they made of it a very effective public speaking and expression course as well as a study of economic problems. This was done by handling many of the problem-case discussions under Parliamentary form of organization with a student chairman. The men set a very high estimate upon this by-product phase of the course.

W. J. DONALD.

The Chain Store. Published by the Marketing Division, Frank Seaman, Incorporated, New York, N. Y., March, 1928. 71 pages. $1.00.

The chain store is only 68 years old, yet out of every dollar spent at retail in 1927, 12 cents was rung up on chain store cash registers.

This exceedingly interesting document reviews the chain store situation to-day, the rapid growth of the chain store, the beginnings of the chain store movement, the fields in which the chain store operates, the basis of chain store development, forecasts something of the future of the chain store, compares the chain store with "old line" distribution, discusses the question of meeting chain store competition, compares chain store manufacturing and private brands, the relation of the manufacturer to the chain store system, and the problem of selling to chain systems.

There are some very interesting charts and tables including a map showing the distribution of chain stores in the Herald Square area of New York City.

An appendix covers miscellaneous chains and a bibliography of all sorts of information, books, magazines, mailing list houses, etc.

The Behavior of Prices. By Frederick C. Mills. National Bureau of Economic Research, Inc., New York, 1927. 598 pages. $7.00.

Dr. Mills has done a colossal piece of work in the preparation of this first volume of the analysis of price relationships.

The objectives set for the work are clearly outlined in the introduction, "to secure fuller understanding of the behavior of individual commodity prices, to increase our knowledge of the workings of a price system and of the interrelations between its component parts," and true to the author's style the result is sought in a most logical and orderly fashion.

The simplicity of his style makes it possible to understand his problems and methods. From the very nature of the problem the book requires careful attentive reading.

This volume does not attempt to make detailed comparisons of groups of prices but defers this for treatment in a later volume.

Throughout the reading of this book the reviewer was impressed with the enormity of the volume of work prerequisite to the writing of the book. In the appendix there are 142 pages of measurement tables and scarcely a page is written without at least one table or chart injected. Each step in the study is carefully explained.

It is hoped (said after much deliberation), that the use which will be made of this work will be worthy of the effort expended in its preparation. The reviewer has had some experience with individuals in various industries whose responsibility includes the setting of prices. It is questionable whether or not, during the Production Era through which we have just recently passed these individuals built prices upon economic conditions, or based them on personal ability to do bigger things with a higher or lower price, for price changes very often occur with changing management probably indirectly caused by changing economic conditions. Questions of bigger and better profits to jobbers and wholesalers in order to get better distribution often influences sales managers to change prices arbitrarily. This may or may not be the reason for accidental changes in prices. This thought is injected here rather to impress readers that we are in a Sales Era and must make use of every available scientific measure which will assist us in our efforts to obtain sales at a profit. Prices therefore must be built scientifically with respect to internal costs and economic conditions. Sales Competition bears an enormous weight on the setting of prices which may or may not account for sagging, rising or constant prices and makes use of scientific measuring sticks questionable until prices are constructed scientifically.

The work is a pioneering effort to measure the behavior of prices, to outline first the characteristics of 209 commodity prices, second the regional differences in these prices, third the method used in the measurement of the instability of prices and finally the measures of price behavior in combination. There are innumerable prices which are not affected by any of the factors mentioned and therefore this volume should be the basis of future creative thinking by research workers in industry as well as those in the academic field for there appears to be little doubt but that Dr. Mills has successfully measured certain characteristics of prices.

Each phase of the study is carefully summarized and the excellent index of commodities makes possible immediate references to the studies, a feature appreciated by both the practical and theoretical business men.

For the student of prices as well as the theoretical statistician or the practical business man the author answers questions heretofore guessed at and shows the variability of prices, their fluctuations during periods of both rising and falling prices, their instability, the length of cycles, if one exists, etc., for some 400 commodities, economic and specific questions which today disregarded may mean "profitless prosperity" tomorrow.

C. P. GRASSMUCK, *Director of Sales Planning and Research, Wilson & Co., Inc.*